Ambient Air Quality Impact Report (AAQIR)
Mountainview Power Company, LLC
(SE 04-01)

This document serves as the statement of basis as required by 40 CFR 124. This document sets forth the legal and factual basis for permit conditions, including references to applicable statutory or regulatory provisions, including provisions under 40 CFR 52.21. This document is for all parties interested in the permit.

1.0 APPLICANT

Mountainview Power Company, LLC
2492 W. San Bernardino Avenue
Redlands, CA 92374

2.0 PROJECT LOCATION

Mountainview Power Company is located in Redlands, California, in San Bernardino County. With respect to the National Ambient Air Quality Standards (NAAQS), this location is designated as attainment/unclassified for nitrogen dioxide (a component of NOx), sulfur dioxide (SOx), and lead, and is designated as nonattainment for ozone, carbon monoxide (CO), and particulate matter. The U.S. Environmental Protection Agency Region IX has jurisdiction for regulating all attainment/unclassified pollutants in this area.

3.0 FACILITY DESCRIPTION

Mountainview Power Company, LLC owns and operates a natural gas-fired combined cycle power generating facility located in Redlands, California, within the property of an existing decommissioned twin boiler power plant. The facility consists of four combined cycle GE 7FA gas turbine engines equipped with duct burners and evaporative coolers. Each turbine is nominally rated at 166.7 MW (gross), and is equipped with an auxiliary fired heat recovery steam generator (HRSG) to recover waste heat from the turbine exhaust gases. Duct burners in the HRSG are rated at 135 mmbtu/hr. The turbines are paired into two power blocks, with each block served by one steam turbine receiving steam from a pair of HRSGs. Each steam turbine is rated at 209.2 MW (gross). The facility is also equipped with four cooling towers, two diesel-fired emergency engines, and two ammonia storage tanks. Air pollution control equipment consists of Dry Low NOx combustors, Selective Catalytic Reduction systems (SCR) and CO catalysts. Net nominal output from the facility is 1055.9 MW.

4.0 INITIAL PREVENTION OF SIGNIFICANT DETERIORATION (PSD) PERMIT

The Mountainview Power Project is subject to the requirements of the Prevention of Significant Deterioration (PSD) regulations for NOx. The South Coast Air Quality Management District (SCAQMD) issued the initial construction/Prevention of Significant Deterioration (PSD) permit

on May 24, 2001 as a combined PSD, NSR, RECLAIM, and Title V permit. SCAQMD extended the initial construction permit three times – on May 31, 2002, March 28, 2003, and February 17, 2004.

5.0 PAST MODIFICATIONS

On September 17, 2004, SCAQMD issued a revised permit to modify start-up, shutdown, and commissioning period requirements; to add the definition of, and emission limits for, combustor tuning events; and to allow miscellaneous design and equipment changes. However, because EPA withdrew delegation of authority to issue PSD permits from SCAQMD on March 3, 2003, EPA processed the September 2004 modifications for PSD purposes. The revised PSD permit was issued by EPA on May 20, 2005.

6.0 CURRENT PROPOSED MODIFICATION

Mountainview submitted an application to EPA to modify its current PSD permit on September 16, 2005. The application was supplemented in an email, dated September 22, 2005. Pursuant to the current PSD permit, Mountainview is required to meet a limit of 2.0 parts per million by volume (ppmv) for NOx; the permit is currently drafted such that turbine shutdown events are subject to the 2 ppmv NOx limit. However, because the control device is not fully effective during the latter stages of turbine shutdown, and because combustion is suboptimal during decreased loads, Mountainview will not be able to meet this NOx limit during a shutdown event. Mountainview is requesting an alternative emission rate for turbine shutdown periods[1]. EPA is proposing to modify the PSD permit to impose a 30 minute time limit and a 70 lb NOx emission limit during turbine shutdown events, per turbine and per shutdown. There will be no increase to the annual emissions limit. These revisions are consistent with SCAQMD's proposed revisions to the non-attainment NSR permit, received by EPA for review on August 22, 2005.

7.0 PREVENTION OF SIGNIFICANT DETERIORATION REVIEW

In evaluating applications to revise PSD permits, EPA considers whether the change triggers new requirements and whether the requested changes to the permit ensure that the PSD requirements continue to be met. EPA must also ensure that the revisions do not interfere with the source's obligation or ability to protect ambient air quality and increments, or to comply with the requirements of BACT and the Endangered Species Act.

7.1 Emissions Increase

The proposed changes to the source do not trigger new PSD requirements because they will not result in a significant emissions increase as defined in 40 CFR §§ 52.21(b)(3) and (23). Because this source has not yet begun actual operation, emissions are calculated

1 Alternative to BACT for steady state operations.

based on the source's potential to emit. 52.21(b)(21)(iv). The proposed change does not trigger new PSD requirements because it will not result in a change of the potential to emit NOx. No change is being made to the annual NOx emission limit of 275.9 tons/year, based on a 12-month rolling average. Emissions from shutdowns must be included in calculating emissions for the purpose of this annual emissions limit. See Condition X.F.5. This annual emissions cap is more limiting than the short-term limits for startups and shutdowns and represents the maximum allowable NOx emissions from the turbines. PSD has not been triggered for any other pollutants at this source.

7.2 Air Quality Impacts

The PSD regulations require an ambient air quality impact analysis to determine the impacts of the proposed project on ambient air quality. For all regulated pollutants emitted in significant quantities, the analysis must consider whether the proposed project will cause a violation of (1) the applicable PSD increments, and (2) the National Ambient Air Quality Standards (NAAQS).

Prior to issuance of the PSD permit in 2001, Mountainview conducted the required analysis and demonstrated that the maximum annual average NO_2 concentration was below the prescribed significant modeling concentration level of 1 $\mu g/m^3$, and that there would be no adverse impact on Class I areas. The impact analysis was updated for the modification issued in May of this year. The updated analysis also indicated that there would be no adverse impact on air quality.

The impact analysis for the May modification considered the air quality impacts resulting from increased startup emissions, using an assumption of 2266 lb/day of NOx, from all four turbines combined. Mountainview submitted a revised analysis of impacts in September, using an assumption of 3419 lb/day of NOx from all four turbines combined. Both analyses demonstrated no impact. To ensure that the current modification does not result in adverse impacts to air quality, EPA is proposing to add a short-term emission limit of 3419 lb/day of NOx for all four turbines combined, including emissions resulting from startups and shutdowns. Based on this limit, no adverse impact on air quality is expected from the proposed revisions to the PSD permit for Mountainview Power. Additionally, EPA is proposing to limit turbine startups and shutdowns to 3008 hours per year for all four turbines combined to ensure that operations are consistent with the assumptions made in the previously submitted annual impact analysis.

7.3 Best Available Control Technology (BACT)

7.3.1 Definition of Best Available Control Technology

Any major source or major modification subject to PSD must conduct an analysis to ensure the application of best available control technology (BACT) [40 CFR §52.21(j)].

The federal Clean Air Act (CAA) defines best available control technology (BACT) as follows:

> The term "best available control technology" means an emission limitation based on the maximum degree of reduction of each pollutant subject to regulation under the Clean Air Act emitted from or which results from any major emitting facility. The permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, makes a BACT determination through application of processes and available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of each such pollutant. In no event shall application of BACT result in emissions of any pollutant which will exceed the emission allowed by any applicable standard established pursuant to section 111 (NSPS) or 112 (NESHAP) of the Clean Air Act [CAA §169(3)].

EPA has also stated that BACT may be a design, equipment, work practice, operational standard, or combination thereof in the event that EPA determines that emission measurement limitations for a particular unit would make the imposition of an emission standard infeasible. *See* EPA's New Source Review Manual, at page B-56.

A top-down BACT analysis for operations at Mountainview Power was conducted by SCAQMD when the initial PSD permit was issued in 2001, and was amended by EPA in May, 2005, to address startup emissions. These analyses can be found in the support documents accompanying those permits. EPA is proposing to modify the current PSD permit to address shutdown emissions at Mountainview Power.

7.3.2 BACT for Combustion Turbines and Duct Burners - Shutdown Operations

BACT applies during all modes of operation, although alternate BACT limits may be specified for varying modes of operation. The current PSD permit, as amended by EPA in May, 2005, specifies a BACT limit of 2.0 ppmv NOx, but provides for an alternate BACT limit to apply during startup events, as compliance with the 2.0ppmv NOx limit is technically infeasible during start-ups.

The current PSD permit does not specify an alternative BACT limit for shutdown events. However, Mountainview has submitted information to EPA and SCAQMD indicating that compliance with the 2.0 ppmv concentration limit for NOx is not technically feasible during shutdown events given the gas turbine and SCR at Mountainview. Compliance with this limit is infeasible during shutdown events at Mountainview for several reasons.

First, the NOx reduction reaction that takes place in the SCR unit only occurs over a limited temperature range. While Mountainview will be limited to 30-minutes per shutdown, the SCR unit may not be at an optimal temperature for the NOx reduction

reaction to occur for the full duration of a shutdown event. Second, while ammonia injection is automated to provide an optimal balance for the reaction between ammonia and NOx to occur, unsteady load conditions during shutdown events can result in too much or too little ammonia being injected into the flue gas, occasionally resulting in excess NOx emissions or excess ammonia slip. Third, during the conditions of decreased loads which occur during shutdowns (less than 60% gas turbine output), the ratio of air to fuel increases in the gas turbine combustion chambers. Excess air plays a major role in the formation of NOx. When more air is present than what is needed for efficient combustion, more oxygen is available to combine with the nitrogen naturally present in air, resulting in higher levels of NOx formation[2].

Because it is technically infeasible for Mountainview to comply with a limit of 2.0 ppmv NOx during shutdown events, a new limit must be set for such operations. BACT limits for gas turbine shutdowns are typically represented by limits on the duration of such events and allowable emission rates during the events (hourly and/or per event)[3]. EPA is proposing as BACT during shutdown events a 30-minute time limit and a 70 lb emission limit, per turbine and per shutdown. As these limits are equivalent to or lower than limits established for shutdown periods at other similar gas-fired combined cycle facilities, EPA finds that these limits will ensure that BACT is satisfied during shutdown periods at Mountainview Power.

7.3.3 Other

EPA is also taking this opportunity to correct a mistake made in the definition of cold startup in the May, 2005 permit modification issued by EPA. Mountainview is configured as a two-on-one power block, with two gas turbines and two HRSGs serving one steam turbine. The current permit defines a cold startup as "a startup of the gas turbine after 72 hours of non-operation." However, because the temperature of the steam turbine, rather than the gas turbine, is the determining factor for how quickly a gas turbine can be brought up to base load, and is the reason why additional time is needed for cold starts, EPA is proposing to revise this definition to relate cold starts to the steam turbine. EPA is proposing to revise the permit to define a cold start as: "a startup of a gas turbine after the steam turbine has been shut down for 72 hours or more."

---

2 Additionally, due to the fact that during shutdowns the oxygen concentration in the turbine exhaust is close to the oxygen concentration in the ambient air, errors occur in the NOx concentration readings from the continuous emissions monitoring system (CEMS). This is because the CEMS is programmed to correct emissions to 15% oxygen. As the oxygen concentration in the exhaust gas nears 15%, the readings become skewed, indicating higher emissions than what are actually occurring.

3 See, for example, the PSD permits for Wanapa Energy Center in Washington; Summit Vineyard, LLC in Utah; Central Mississippi Generating Company, LLC in Mississippi; and Los Angeles Department of Water and Power, Valley Generating Station, in California.

7.4 Endangered Species Act

Pursuant to Section 7 of the Endangered Species Act (16 U.S.C. 1536, and its implementing regulations at 50 CFR Part 402), EPA is required to ensure that any action authorized, funded, or carried out by EPA is not likely to jeopardize the continued existence of any endangered or threatened species, or result in the destruction or adverse modification of designated critical habitat for such species. During the review of the initial application for this power plant, EPA determined that the PSD permitting action is subject to ESA Section 7 requirements and requested a biological opinion (BO) from US Fish and Wildlife Services (FWS).

On April 12, 2001, FWS issued a BO (FWS-SB-699.5) that discusses impacts to the following federally listed endangered or threatened animal and plant species: San Bernardino kangaroo rat, Delhi Sands flower-loving fly, Santa Ana River woolly-star, coastal California gnatcatcher, Bell's vireo, southwestern willow flycatcher, arroyo southwestern toad, and the Santa Ana sucker. For each of the species listed, with the exception of the San Bernardino kangaroo rat, FWS determined that the project is not likely to cause an adverse affect based on the applicant's commitments to avoid effects to areas with habitat for these species, and the lack of detection of these species during biological surveys of the project area. In its evaluation of the project's effects on the San Bernardino kangaroo rat, the FWS concluded that the proposed action is not likely to jeopardize the continued existence of the kangaroo rat and will not result in destruction or adverse modification of proposed critical habitat for the kangaroo rat.

On May 24, 2004, FWS issued a revised BO (FWS-SB-699.10) analysing the effects of proposed changes to the gas pipeline and the installation of a new valve station for the project on the San Bernardino kangaroo rat and the Delhi Sands flower-loving fly. FWS concluded that the changes to the pipeline and the addition of the valve station are not likely to jeopardize the continued existence, nor result in the adverse modification or destruction of designated critical habitat, of the San Bernardino kangaroo rat or the Delhi Sands flower-loving fly.

For the May, 2005 modification, EPA determined that the revisions would not affect listed species or critical habitat in a manner that was not considered in the initial or revised BO. FWS agreed with EPA's determination during a phone call on April 7, 2005. Because annual emissions will not increase, and because short-term emission increases will be less than those resulting from the May, 2005, modification, EPA has likewise determined that the current proposed revisions will not affect listed species or critical habitat in a manner that was not considered in the initial or revised BO.

8.0 CONCLUSION AND PROPOSED ACTION

Based on the information supplied by Mountainview Power Company, EPA has

determined that the proposed changes to the PSD permit do not trigger new major modification requirements under the PSD rules, and that the permit revisions regarding turbine shutdown activities continue to satisfy PSD requirements for BACT and protection of ambient air quality and increment consumption. Therefore, EPA is proposing to issue a revised PSD permit.